

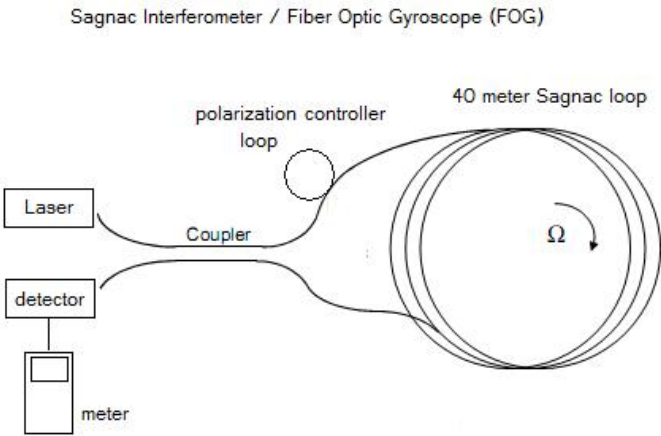
How to Build a Sagnac Interferometer / Fiber Optic Gyroscope ( FOG )

Doug Marett ( 2010)

Our Instructional Video on YouTube

Some other details of the project:

1) The schematic diagram of the device:



2) A picture of the component parts (a smaller loop is shown for reference in yellow):



The part List:

These parts are selected for the best match of components using all FC/PC or FC/UPC connectors at the 1310nm wavelength

| Part                                          | Quantity | Source                                                           |
|-----------------------------------------------|----------|------------------------------------------------------------------|
| Laser diode 1 mW 1310 nm with FC/PC connector | 1        | <a href="#">with case and switch</a>                             |
| battery power supply 1.5VDC                   | 1        | <a href="#">with RCA connector</a>                               |
| PIN photodiode with FC/PC connector           | 1        | <a href="#">diode alone</a> <a href="#">diode with amplifier</a> |
| 2 x 2 coupler 50:50 with FC/PC connectors     | 1        | <a href="#">skyhunt.net</a>                                      |
| fiber optic loop with FC/UPC connectors 100m  | 1        | <a href="#">skyhunt.net</a>                                      |
| single polarization/phase controller wheel    | 1        | <a href="#">with mounting leg</a>                                |
| mounting platform                             | 1        | <a href="#">flat round perforated metal pan</a>                  |
| FC/PC adapters                                | 2        | <a href="#">Senko type</a>                                       |

**3. Calibration Test Run:****Test Run:**

| 33 RPM mV Diff. | 45 RPM mV Diff |
|-----------------|----------------|
| 31              | 42             |
| 31              | 41             |
| 29              | 39             |
| 29              | 39             |
| Average:        | Average:       |
| 30 mV           | 40.15 mV       |

1 mV ~ 1.1 RPM

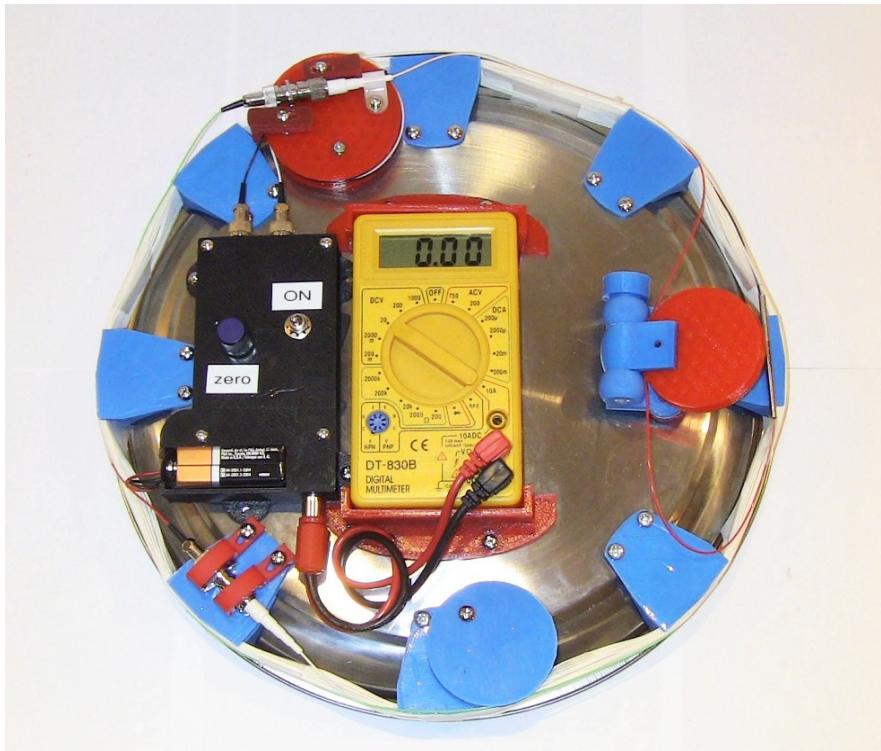
Expected Difference : 12.0 RPM

Measured: 11.2 RPM

Thus:

mV difference is approximately proportional to RPM

A fully assembled iFOG with a 100m fiber optic loop is shown below on its mounting platform.



**Kits now available!** - please visit our webstore [www.skyhunt.net](http://www.skyhunt.net)

**Other Relevant Information:**

Discussion on the theory of the Sagnac interferometer and the Michelson-Gale experiment can be found [here](#).

An interactive Sagnac interferometer simulator can be found [here](#).

The original paper by Georges Sagnac can be found [here](#).

The Dufour and Prunier paper (English Translation) with its detailed analysis of the Sagnac interferometer and how it does not obey relativistic theory can be found [here](#).

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